Science can be defined as a way of discovering how things work. Science is continually refining and expanding our knowledge of the universe, and as it does, it leads to new questions for future investigation (based on UC Berkeley’s introduction to science, 2018).

František’s work in the submitted Ph.D. thesis fulfills the definition of science and František has mastered over the past five years the trade and the creativity of the science. He has progressed from newcomer (so called novichok) to a scientist who is able to write a comprehensive article summarizing his work, he now knows how to lead discussion, answer questions, pay thorough attention to details, think critically and present his results. This is the mastering of the trade of science. His creativity during the progress towards his Ph.D. course has led to several new discoveries, very well received by the broad international scientific community, especially outside of the Czech Republic.

His work on stability of the moment tensor inversion led to discovery of the fact that the least square inversion of moment tensor is similar to stacking. He showed that we can join the benefits of prospection seismology, where stacking is used to enhance signal, with earthquake research of source mechanisms. His work on conditional numbers explains why even multiple borehole arrays may not provide sufficient source mechanism resolution, a fact commonly overlooked by many in academia and industry. The collaborative research on joint location and source mechanism inversion led by Dr. Denis Anikiev summarized in the ‘classic’ 2014 article (26 citations in WOS, August 2018) would not be possible without thorough tests and critical analysis based on František’s subset of data exploited for benchmarking. A side track research theme enabling to use semblance for source mechanism inversion is not yet well discovered gem coming again from his collaboration with Dr. Valenta and Dr. Anikiev. The bold claim that induced microseismic data can be used to constrain single stress field can benefit from more critical thinking as well as testing of Dr. Jechumtálová’s software. However, this work does not really affect the most innovative part of his thesis – the bedding plane slip model which attracted not only large number of citation (2013 SEG abstract 35+ citation on Scopus), but also at least two SEG workshops focused on this topic and ongoing discussion in the scientific community.

In summary, František is able to work independently as well as in the collaborative environment. He can join benefits of industry and academia in his research to bring new findings in both basic and applied research. Last but not least his work is innovative and relevant, a rare quality in today’s research.

I am excited that Francois Cornet agreed to review the thesis and I am looking forward to discussion on this model.